

a. Accuracy

One major drawback associated with these solutions is that they do not meet the Phase II E911 accuracy requirements. According to AT&T, its switch-based technology, Mobile-Assisted Network Location System (“MNLS”), can offer accuracy of 250 meters for 67 percent of 911 calls and 750 meters for 95 percent of all such calls.⁵¹ Ericsson recently indicated that it has a switch-based solution that can produce approximately 250 meter accuracy for 67 percent of calls.⁵² Cingular’s tests with Ericsson and Polaris confirmed this accuracy level for switch-based systems.

b. Speed of Deployment

The primary benefit of switch-based solutions is that they can be deployed faster than most technologies because they do not require the installation of base station hardware. Instead, these solutions rely primarily on the creation of databases and switch-upgrades. Because these upgrades would not be available for all of Cingular’s TDMA switches until late 2002,⁵³ however, deployment of a switch-based solution could not be completed in markets with outstanding PSAP requests until late summer 2003.

⁵¹ AT&T Waiver at 13.

⁵² Stromquist MNLS Letter at 6.

⁵³ Letter from Steve McNitt, Wireless Strategy Director, Nortel Networks, to Evans Roberts, Cingular Wireless, at 2 (July 3, 2001) (concerning Nortel Networks’ TDMA based E911 Phase II core technology) (Attachment F).

2. Handset Technologies

Cingular tested handset-based technologies for its TDMA networks, but was unable to obtain any firm commitments regarding the commercial availability of compliant TDMA handsets. To the contrary, numerous vendors publicly announced that they would no longer devote substantial resources to the development of such products.⁵⁴ Accordingly, handset-based technologies were eliminated from consideration as a potential Phase II solution for Cingular's TDMA networks.

⁵⁴ See, e.g., Nokia Letter at 1; Motorola Letter at 1; Panasonic Letter at 1.

CONCLUSION

For the foregoing reasons, there is good cause to grant the instant waivers so that Cingular can deploy TruePosition's network-based solution for its TDMA/AMPS networks. With respect to markets that utilize a different combination of air interfaces (*e.g.*, TDMA/AMPS/UMTS, TDMA/AMPS/GSM, or TDMA/GSM), grant of this waiver would authorize Cingular to deploy in these markets: (i) a solution that fully complies with the Commission's rules from the outset; (ii) a solution for which Cingular has received prior approval via the waiver process; or (iii) TruePosition's solution.

Respectfully submitted,

CINGULAR WIRELESS LLC

By:

A handwritten signature in dark ink, appearing to read "J. R. Carbonell", with a stylized flourish at the end.

J. R. Carbonell
Carol L. Tacker
David G. Richards
5565 Glenridge Connector
Suite 1700
Atlanta, GA 30342
(404) 236-5543

Its Attorneys

August 30, 2001

CERTIFICATE OF SERVICE

I, Eric Butts, do hereby certify that on this 30th day of August 2001, a copy of the foregoing Petition for Waiver was served by hand delivery on the following parties:

Peter A. Tenhula
Senior Legal Adviser
Office of Chairman Powell
Federal Communications Commission
445 Twelfth Street, S.W. Room 8-A204
Washington, DC 20554

Monica Shah Desai
Interim Legal Advisor
Office of Commissioner Martin
Federal Communications Commission
445 Twelfth Street, S.W. Room 8-C302
Washington, DC 20554

Adam D. Krinsky
Senior Legal Adviser
Office of Commissioner Tristani
Federal Communications Commission
445 Twelfth Street, S.W. Room 8-D115
Washington, DC 20554

Bryan Tramont
Senior Legal Adviser
Office of Commissioner Abernathy
Federal Communications Commission
445 Twelfth Street, S.W. Room 8-B115
Washington, DC 20554

Paul Margie
Legal Adviser
Office of Commissioner Copps
Federal Communications Commission
445 Twelfth Street, S.W. Room 8-A302
Washington, DC 20554

Thomas J. Sugrue
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C207
Washington, DC 20554

James D. Schlichting
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C207
Washington, DC 20554

Gerald P. Vaughan
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C207
Washington, DC 20554

Kathleen O'Brien Ham
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C255
Washington, DC 20554

Blaise A. Scinto
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C133
Washington, DC 20554

Kris A. Monteith
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C124
Washington, DC 20554

Jennifer Tomchin
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C122
Washington, DC 20554

Jay Whaley
Wireless Telecommunications Bureau
Federal Communications Commission
445 Twelfth Street, S.W. Room 3-C207
Washington, DC 20554

A handwritten signature in black ink, reading "Eric Butts". The signature is written in a cursive style with a horizontal line extending from the end of the name.

Eric Butts

ATTACHMENT A

COVERED CARRIERS

Set forth below are all FCC licensees covered by the instant waiver request and Cingular's pending GSM waiver request.

Abilene SMSA Limited Partnership
Acadiana Cellular General Partnership (RSA's No. 5 & 6)
Alabama Cellular Service, LLC
Amarillo SMSA Limited Partnership
Amcell of Atlantic City, LLC
American Cellular Communications LLC
American Cellular Network Company, LLC
Ameritech Mobile Communications, LLC
Ameritech Wireless Communications, LLC
Anniston-Westel Company, LLC
Atlanta-Athens MSA Limited Partnership
Aurora/Elgin Cellular Telephone, LLC
BCTC of Texas, LLC
BellSouth Carolinas PCS, L.L.C.
BellSouth Mobility LLC
BellSouth Personal Communications, LLC
Bloomington Cellular Telephone Company
CCPR of the Virgin Islands, Inc.
CCPR Paging, Inc. (transaction pending)
CCPR Services, Inc. (transaction pending)
Cell South of New Jersey, LLC
Champaign CellTelCo
Chattanooga MSA Limited Partnership
Cincinnati SMSA Limited Partnership
Cingular Interactive L.P.
Corpus Christi SMSA Limited Partnership
Dallas SMSA Limited Partnership
Decatur Cellular Telephone Company, LLC
Decatur RSA Limited Partnership
Delaware Valley PCS Communications, LLC
Detroit SMSA Limited Partnership
Eastern Missouri Cellular Limited Partnership
Florida Cellular Service, LLC
Florida RSA No. 2B (Indian River) Limited Partnership
Galveston Cellular Telephone Company
Georgia RSA No. 1 Limited Partnership
Georgia RSA No. 2 Limited Partnership
Georgia RSA No. 3 Limited Partnership
GTE Mobilnet of Austin Limited Partnership
GTE Mobilnet of Texas RSA #11 Limited Partnership
GTE Mobilnet of Texas RSA #16 Limited Partnership

Houma-Thibodaux Cellular Partnership
Houston Cellular Telephone Company, L.P.
Huntsville MSA Limited Partnership
Indiana 8, L.L.C.
Indiana Cellular LLC
Jacksonville MSA Limited Partnership
Joliet Cellular Telephone, LLC
Kansas City SMSA Limited Partnership
Kentucky CGSA, LLC
Lafayette MSA Limited Partnership
Louisiana Cellular Holdings, L.L.C.
Louisiana RSA No. 7 Cellular General Partnership
Louisiana RSA No. 8 Limited Partnership
Lubbock SMSA Limited Partnership
Madison SMSA Limited Partnership
McAllen-Edinburg-Mission SMSA Limited Partnership
MCTA
Memphis SMSA Limited Partnership
Midland-Odessa SMSA Limited Partnership
Milwaukee SMSA Limited Partnership
Missouri 9B1 Limited Partnership
Missouri RSA 11/12 Limited Partnership
Missouri RSA 8 Limited Partnership
M-T Cellular, LLC
Northeast Mississippi Cellular, LLC
Northeastern Georgia RSA Limited Partnership
Northwest Missouri Cellular Limited Partnership
New York Holdings, LLC
Oklahoma City SMSA Limited Partnership
Oklahoma RSA 3 Limited Partnership
Oklahoma RSA 9 Limited Partnership
Orlando CGSA, LLC
Orlando SMSA Limited Partnership
Pacific Bell Wireless Northwest, LLC
Pacific Bell Wireless, LLC
Pacific Telesis Mobile Services LLC
San Antonio SMSA Limited Partnership
San Juan Cellular Telephone Company (transaction pending)
SBMS Cellular Telecommunications Bloomington, LLC
SBMS Cellular Telecommunications Springfield, LLC
SNET Mobility, LLC
Southwestern Bell Mobile Systems, LLC
Southwestern Bell Wireless, LLC
St. Joseph SMSA Limited Partnership
Tennessee RSA Limited Partnership
Texas RSA 10B1 Limited Partnership

Texas RSA 10B3 Limited Partnership
Texas RSA 18 Limited Partnership
Texas RSA 19 Limited Partnership
Texas RSA 20B1 Limited Partnership
Texas RSA 6 Limited Partnership
Texas RSA 7B1 Limited Partnership
Texas RSA 9B1 Limited Partnership
Texas RSA 9B4 Limited Partnership
Topeka SMSA Limited Partnership
USVI Cellular Telephone Corporation (transaction pending)
Vineland Cellular Telephone Company, LLC
Washington/Baltimore Cellular Limited Partnership
Westel-Indianapolis LLC
Westel-Milwaukee Company, LLC
Wichita SMSA Limited Partnership
Worcester Telephone Company

Pursuant to a joint operating agreement among BellSouth Personal Communications, LLC and certain other members of FCC licensee BellSouth Carolinas PCS, L.L.C., each of the companies listed below has been, or will be, an assignee (collectively, the "Assignees") of a partitioned portion of Broadband PCS radio station KNLF213 for the Charlotte-Greensboro-Greenville-Raleigh MTA (MTA006). In accordance with such agreement, BellSouth Carolinas PCS, L.L.C. ("Assignor") sells to such Assignees its base transceiver stations (BTSs, or cellsites) and related equipment located in the Assignees' respective partitioned portions of MTA006. Assignor and the Assignees have agreed to continue to operate their respective portions of the original GSM network as one integrated network. The Assignees will maintain their BTSs. Assignor will maintain its BTSs, along with all of the mobile switching centers for the network, and is responsible for providing centralized PCS network management to the Assignees, including monitoring and managing overall network quality, consistency, performance and security. Assignor is also responsible for setting the network technical standards for the entire MTA006 GSM network. Accordingly, any decision by Assignor regarding the technology solution for E911 effectively binds the Assignees as well. Consequently, Assignor is adding the above-named Assignees to the list of affiliates set forth on Attachment A to which Assignor's waiver request for its GSM networks applies.

List of Covered Assignees:

HTC Communications, Inc. (partitioned 12/19/00)
FTC Management Group, Inc. (partitioned 3/1/01)
Carolina Personal Communications, Inc. (partitioned 6/1/01)
Comporium Wireless, LLC (partitioned 8/1/01)
Atlantic Seawinds Communications, LLC (scheduled for partitioning 9/1/01)
North State Telephone Company (scheduled for partitioning 10/1/01)
PRTCommunications, LLC (scheduled for partitioning 11/1/01)

ATTACHMENT B

BELLSOUTH
WIRELESS, INC.

**Wireless Location for
Enhanced 911 Emergency Services
(E911)**

Industry Request for Information

March 1996

Questions relating to this document should be addressed, in the first instance, to :

Stephen M. Blust
Project Manager
1100 Peachtree St. N.E.
Room 803
Atlanta, GA 30309

Telephone: 404 249 5058

E. L. Reynolds
President

BellSouth Wireless, Inc.
Suite 1000
1100 Peachtree Street, N.E.
Atlanta, Georgia 30309-4599
404 249-5315
Fax: 404 249-4488

March 1, 1996

TO: Recipients of *Wireless Location for Enhanced 911 Emergency Services (E911)* Industry Request For Information

The enclosed Request For Information (RFI) invites your company to supply information about technology, products, systems, hardware, and software and ideas that BellSouth could employ to provide wireless caller location information for E911 emergency services. This information may relate to current or future offerings, including those under development or in the advanced stages of research.

The main thrust of this RFI is to determine the availability of the technology required to provide improved location capability for wireless E911 calls originating from cellular, PCS, SMR, or other wireless services. BellSouth Wireless, Inc. is seeking to facilitate the advancement of location technologies in commercial wireless systems by supporting key developments and standards and to promote requisite changes in intervening networks and public safety answering points to ensure full utilization of these capabilities.

BellSouth Wireless, Inc. recognizes the complexities and the challenges to be faced before the full benefits of improved wireless E911 location can be realized. Therefore, we are addressing this RFI to a broad audience that includes emerging and established companies in the fields of telecommunications, location, and public safety.

We appreciate your thoughtful consideration of this RFI and look forward to your response. Additionally, we see this RFI as a starting point for insightful dialog between BellSouth and the individual responding companies on this topic.



Attachment

DISCLAIMER

This document is published by BellSouth, Inc. ("BellSouth") to solicit information from the wireless telecommunications industry. BellSouth reserves the right in its sole discretion to revise this document for any reason.

BellSouth makes no representation or warranty, express or implied, with respect to the completeness, accuracy or utility of the document or any information or opinion contained therein. Any use or reliance on the information or opinion is at the risk of the user, and BellSouth shall not be liable for any damage or injury incurred by any person arising out of the completeness, accuracy or utility of any information or opinion contained in the document.

This document is not to be construed to suggest that any manufacturer modify or change any of its products or procedures, nor does it represent a commitment by BellSouth or any affiliate to purchase any product whether or not it meets the described characteristics. Nothing contained herein shall be construed to confer any license or right to any intellectual property, whether or not the use of any information herein necessarily utilizes such intellectual property.

This document does not constitute an endorsement of any product or company or adoption or promulgation of any guidelines, standards, or recommendations.

© BellSouth Wireless, Inc. 1996

All Rights Reserved.

Printed March 1996

CONTENTS

| | |
|--|-----------|
| 1. SUMMARY | 5 |
| 2. SCOPE | 6 |
| 2.1 Document Organization | 6 |
| 3. OBJECTIVE | 8 |
| 4. RFI POLICY, GUIDELINES, LIMITATIONS AND TIMESCALES | 9 |
| 4.1 Intellectual Property Rights Matters | 9 |
| 4.2 RFI Policy | 9 |
| 5. CONFIDENTIALITY OF INFORMATION | 10 |
| 5.1 Confidentiality of Verbal Information | 10 |
| 6. FORMAT OF RESPONSE INFORMATION | 11 |
| 7. INTRODUCTION | 12 |
| 7.1 Purpose | 12 |
| 7.2 Background | 13 |
| 7.3 Market Environment | 14 |
| 7.4 Development Drivers | 18 |
| 8. BELL SOUTH'S REQUIREMENTS | 20 |
| 8.1 PSAP Requirement | 20 |
| 8.2 BellSouth Preferred Solution | 22 |
| 9. LOCATION TECHNOLOGY SOLUTIONS | 30 |
| 9.1 Impact on Wireless Network | 30 |
| 9.2 Technology Requirements | 33 |
| 9.3 Timing | 36 |
| 9.4 Alternative Solutions | 36 |
| 9.5 Secondary System Considerations | 37 |
| 10. CHECKLIST OF RFI QUESTIONS | 39 |

APPENDICES

| | |
|-------------------------------|----|
| APPENDIX A REFERENCES | 52 |
| APPENDIX B GLOSSARY | 53 |
| APPENDIX C MAILING LIST | 56 |

LIST OF FIGURES

| | |
|--|-----------|
| <i>Figure 8.1 A Network-Centric Solution.....</i> | <i>23</i> |
| <i>Figure 8.2 A Mobile Subscriber Terminal based Solution.....</i> | <i>24</i> |
| <i>Figure 9.1 Spectrum of Network Integration.....</i> | <i>30</i> |
| <i>Figure 9.2 Technology/Performance Issues Map.....</i> | <i>33</i> |

1. SUMMARY

The purpose of this document is to solicit information about the technical feasibility of providing wireless caller location for E911 emergency services. Information is sought from suppliers of technology, hardware, software, network and operational support infrastructure and subscriber terminals within the emerging and broader wireless telecommunications industry.

Currently, wireless services do not provide adequate caller location information to allow intelligent routing of an emergency 911 call to an appropriate PSAP or response agency through the PSTN. Indeed, in many emergency situations the caller is not aware of their exact location or is suffering additional disorientation caused by the emergency. This lack of location information often extends the call process and delays the dispatch of the proper response agency.

Fundamentally, there are two issues to be addressed for wireless services to provide wireline-compatible emergency 911 information. First, the mobile nature of wireless telecommunications and the unique characteristics of radio communications make location information difficult to determine. Second, once the location information is known, it has to be transferred seamlessly and rapidly through the interconnecting networks to the appropriate rapid response agency. Before high quality location information can be advantageously used to satisfy the requirements of routing to the appropriate PSAP service provider for a timely response, a number of advances must be made in wireless telecommunications systems, the associated interconnecting networks, and the PSAP systems themselves.

The choice of which location technology is 'best' suited for the 911 application is a complex question that has to be evaluated with the application requirements firmly in view. The impact on the wireless network infrastructure will determine the optimal suitability of the myriad of technologies under development.

Due to the complexities of the existing and emerging wireless marketplace (multi-standards environment and multiplicity of service providers), BellSouth believes that the preferred solution for incorporating wireless location functionality is likely to be 'network-centric'. With approximately 30 million cellular subscribers, and growth rates that lead to a doubling of that number along with an additional 10 million PCS subscribers by the year 2000, the installed subscriber terminal base is an important consideration. The level of network integration, it is recognized, will change with time as improved performance location technology becomes commercially feasible. However, a mobile subscriber terminal based solution, on a going forward basis, may provide additional capabilities or advantages. A subscriber terminal based solution will have significant hurdles to overcome, such as size, weight, battery life, cost, etc.

This RFI seeks to answer some the critical questions regarding the impact of implementing a location technology in the wireless network, the factors affecting the choice of location determining technology, the feasibility, timing and cost effectiveness of a solution in the near future. Importantly, this RFI is seeking the answers to these questions from as wide an audience as possible, including emergency service providers, wireless and wireline service providers, as well as technology suppliers and developers.

2. SCOPE

This RFI is being issued by BellSouth Wireless, Inc. BellSouth stands at the top of the telecommunications industry as a world leader in mobile communications. BellSouth and its partners operate mobile systems in 15 countries, serving more than 5.7 million cellular, paging, and mobile data customers in service areas with a combined population of more than 360 million.

BellSouth serves more than 3 million cellular customers, on a proportionate basis, in numerous cities across the US, including Los Angeles, Houston, Atlanta, Miami, and Milwaukee.

BellSouth Personal Communications, Inc. (PCI) will operate a wireless voice and data network in the 1.8 GHz range in two MTA's covering most of North and South Carolina, the eastern third of Tennessee, and portions of eastern Kentucky and southwest Virginia.

BellSouth's European cellular networks are based on the GSM standard. The company is a pioneer in exporting the GSM standard to countries outside of Europe, as it has done in Australia, New Zealand and India.

This RFI is for emerging and existing technology, equipment and systems capability that will enable BellSouth to provide wireless access to enhanced 911 emergency services to its current and future customers. This effort is directed as an inquiry into the technical solutions and functional requirements for wireless location to provide capabilities in the cellular, PCS and other wireless markets. Primary focus is the domestic US market; however, implications for international markets will be considered.

This RFI is being released to the industry in as broad a way as possible to include core technology developers, suppliers, equipment developers and manufacturers, network infrastructure and systems support suppliers and integrators, emergency service providers and organizations who could potentially contribute to the development and implementation of wireless location for enhanced 911 emergency services.

BellSouth will review all information, and any proposals, supplied as a response to this RFI. The evaluations will not be disseminated to any organization outside of BellSouth and its affiliated companies. There will be no ranking of responses, nor will there be an "approved vendor" list resulting from this RFI. Discussions may follow with a selected group of organizations to further the development and test of possible solutions. Responders have an opportunity via this RFI to contribute to BellSouth's wireless vision.

2.1 Document Organization

This document is organized as follows:

- Sections 1, 2, and 3 contain the Summary, Scope, and Objective of this RFI, respectively.
- Section 4 contains the RFI Policy, including licensing, and mailing address for responses.
- Section 5 contains the Confidentiality of Responses which outlines the protection afforded to vendor information and proposals

- Section 6 contains the Response Preparation Instructions and the Format that vendors should follow in submitting information and proposals.
- Section 7 contains the Introduction, which describes the purpose, background, market and technological environment to the request.
- Section 8 explores the emergency call answering service providers' requirements and outlines the BellSouth's requirements for a wireless location solution. These requirements form the basis of this RFI.
- Section 9 contains a discussion related to wireless location enabling technologies and explores the issues and possible impact of the requirement.
- Section 10 contains a complete checklist of the key questions posed throughout the sections of this RFI.
- Appendix A contains a list of references and source material that pertain to the development of this RFI.
- Appendix B contains a list of terms and-acronyms.
- Appendix C consists of the RFI mailing list.

March 1996

Wireless 911 Location RFI

3. OBJECTIVE

In October 1994, The Federal Communications Commission released a Notice of Proposed Rule Making, CC Docket No. 94-102 regarding wireless access to enhanced 911 (E 911) emergency services. BellSouth supports the FCC's objective that "all mobile radio services offering access to real-time voice services provided on the public switched network" should be capable of providing access to emergency services. Establishing ubiquitous wireless access to emergency services must be a coordinated effort among numerous affected groups, including wireless service providers, equipment vendors, manufacturers, local exchange carriers (LECs), public safety answering point service providers (PSAPs), etc.

A great deal of work has already been done by many of these groups addressing the development of the most efficient means of accessing E 911 emergency services from the wireless networks. BellSouth has been an active participant in many of the joint working groups formed to assist in the development of standards for the implementation of wireless access to emergency services, including the development of recent positioning papers by PCIA and TIA (see Appendix A References).

The objective of this RFI is to determine the technical feasibility of providing wireless caller location for E 911 emergency services. As part of that objective BellSouth is aiming to:

- build an information base to enable BellSouth to understand the market and technical environment for providing wireless location services
- ascertain the availability of critical elements, including needed technology development
- stimulate further development
- assemble support from potential suppliers
- encourage industry cooperation to accelerate the development of relevant standards, and to provide leadership so as to guide the regulatory process
- invite proposals and recommendations for joint development and testing.

The information and any resulting proposals or recommendations collected during this RFI process may be used to influence BellSouth's future development plans.

In addition, if location technology is to be deployed as part of enabling wireless access to enhanced emergency services, BellSouth is very interested in exploring other commercial services that would expand the use of the technology and accelerate its development. BellSouth is extremely interested in sharing information that might support such developments, and thereby affect the choice of technology

4. RFI POLICY, GUIDELINES, LIMITATIONS AND TIMESCALES

4.1 Intellectual Property Rights Matters

Vendors will be expected to obtain all necessary intellectual property rights for all technology, hardware, software and systems relevant in response to this RFI. In addition, vendors must identify, within their information or proposals, any proprietary technology embodied in the equipment, software or systems supplied in response to this RFI.

BellSouth would prefer that vendors be willing to cross-license any proprietary technology to other qualified developers and manufacturers in order to avoid single-sourcing and to promote interoperability among the equipment and systems. Vendors should include a statement that clearly expresses their company policy toward licensing technology to other vendors.

4.2 RFI Policy

Any entity who intends to respond to this RFI must submit a letter or fax by the close of business on **Friday March 22, 1996**, as evidence of their intention to supply information. This should be sent to the following address:

BellSouth Wireless, Inc.
Room 803
1100 Peachtree Street NE
Atlanta, GA

Fax: 1-404 249 5157 or
1-404 249 4343

Attention: Mr Stephen M. Blust, Project Manager

Tele: 1-404 249 5058

Entities that have sent an intent-to-supply letter should submit 3 original copies of their information packages by close of business on **Thursday April 19, 1996**, to the above address.

BellSouth reserves the right to extend the above-mentioned intent-to-supply and/or RFI response deadlines or change in any way these submission provisions.

5. CONFIDENTIALITY OF INFORMATION

All information supplied to BellSouth in response to this RFI shall be submitted by each company without any obligation of confidentiality on the part of BellSouth, unless the information is appropriately labeled as "CONFIDENTIAL" and is not within any of the exceptions to confidentiality set forth below ("Confidential Information"). Except as required in connection with review and evaluation of the information or proposals, BellSouth will not disclose any Confidential Information supplied by any company without prior written consent of that company. Access to Confidential Information supplied in response to this RFI shall be restricted to those officers, board members, employees, consultants, and other agents of BellSouth or any of its affiliates who have a need to know the information to properly accomplish their review and evaluation activities.

Confidential Information shall not include any information which:

- prior to supply is known by, or is in the possession of, BellSouth or any of its affiliates without any restriction on its use or disclosure;
- is currently available, or becomes available, to BellSouth or any of its affiliates from a third-party without any non-disclosure obligation in favor of the company originally supplying the same;
- is or becomes generally known or readily ascertainable in the telecommunications industry (or industries supplying or servicing that industry) through no fault of BellSouth; or
- is independently developed by BellSouth or any of its affiliates.

BellSouth shall have the right to disclose Confidential Information in response to a court order or government authority's request, after first notifying the company owning such Confidential Information of such disclosure.

5.1 Confidentiality of Verbal Information

If information which is considered to be confidential is presented verbally, the following procedure must be adhered to.

- The confidential information shall be noted as such during the verbal presentation; and
- All confidential material presented verbally shall be reduced to writing by the disclosing party within fourteen (14) days.

Any obligation to maintain the confidentiality of Confidential Information supplied by any company in response to this RFI shall terminate and all non-disclosure obligations shall cease two (2) years following the date of supply.

6. FORMAT OF RESPONSE INFORMATION

To facilitate consistency of content and structure across vendor responses, a format is described to guide vendors. **Vendors should use this format where possible, but it should not prevent vendors from presenting any information that might be useful to BellSouth.**

Vendors are therefore requested to provide information in three separate sections according to the following structure:

1. Discuss the vendor's view of the evolution of wireless location for emergency 911 in the cellular, PCS, SMR and other wireless industries, focusing on the key drivers for the industry over the next 5 years and the estimated time when they will come into play.
2. Provide answers to the questions contained within the body of the RFI in the format of the table contained in Section 10.
3. Comment on any other aspects of the discussion text contained within the RFI and cross-reference their comments according to the section or subsection of the original text.

As a general rule, the sequence of topics and issues contained in vendor responses must mirror that of this RFI. Hence, all section and subsection numbering schemes contained in vendor responses must correspond to those contained herein. If vendors wish to supply additional information, they should do so by making reference to the additional material within the section or subsection that most closely relates and attach the material as an appendix.

Due to the broad nature of the topic, it is recognized that not all questions may be appropriate for all vendors. BellSouth is interested in any and all views on the topic of wireless user location for 911, even if a responding vendor is able to address only a very narrow area.

Vendor responses should be constructed to conform with the following publishing and editing guidelines:

- Single-sided, single line spaced text using 12 point characters of an easily readable font of the vendor's choosing, on US letter (8.5" by 11") or A4 (210 by 270 mm) size paper.
- All text pages must have a minimum of 1" blank vertical margins (left and right). The pages must be clearly numbered, with title designators if the vendor so chooses, and printed in black on white paper only.
- Pages are to be bound in standard 3-ring binders to permit page removal and re-insertion.
- **3 copies of the response must be provided.**
- Additionally, suppliers may provide their responses in soft copy format to augment their supplied hard copy. This should be provided in Microsoft Word contained on floppy disk, clearly labeled with system type (i.e. Macintosh or Windows) and version of application software.
- Pre-printed brochures, flyers, or other publications may be provided under separate cover or contained in a separate holder within the response binders.

7. INTRODUCTION

7.1 Purpose

The purpose of this RFI is to solicit information and recommendations from the wireless telecommunications industry developers and suppliers addressing the feasibility of automatically locating wireless based 911 callers / mobile subscriber terminals using cellular, PCS, SMR or other wireless service networks.

7.1.1 Audience

This document is targeted at the following organizations:

1. Service Providers
 - Emergency Service or Public Safety Answering Point (ESAP or PSAP) service providers, emergency services agencies and associations such as Association of Public Safety Communications Officials International, Inc. (APCO), National Association of State Nine-One-One Administrators (NASNA), National Emergency Number Association (NENA).
2. Telecommunications Service Providers
 - Wireless and Wireline telecommunications carriers and service providers.
3. Equipment Suppliers
 - Wireless telecommunications equipment suppliers including vendors of Mobile Subscriber Terminals, Base Stations and Base Station Controllers and Switches, Database Management Systems
 - Fixed network equipment suppliers, including vendors of Switching systems, Transmission systems, and Operations, Administration and Maintenance (OA&M) systems.
 - Suppliers of Intelligent Network equipment including Service Control Points (SCPs), Service Switching Points (SSPs), Intelligent Peripherals (IPs), Service Creation Environments (SCEs) and Service Management Systems (SMSs).
4. Technology Suppliers
 - Suppliers of location determining technologies and systems appropriate to the wireless telecommunications industry, including sub-systems and components, functional processing and codec devices, RF modules and devices, and chipsets.
 - Suppliers of components that may deliver increased optimization and flexibility to wireless equipment such as RF signal processing technologies, 'smart antennas' and other wireless system enhancement technologies.
5. New Entrant Organizations
 - Organizations who could be involved in the potential development of the cellular, PCS and/or wireless telephony market in any way, such as the specification of APIs (Application Programming Interfaces), the development of

operating systems, GPS, GIS or other location/mapping and support systems, the sponsorship of industry forums, and so on.

7.1.2 Information Requested

The information being sought relates to the availability of location determining technology and systems required to support wireless location for E 911 emergency services and potentially other business services. It is highly possible that solutions recommended or discussed may not be developed fully at this time; however, such advanced information will be of interest to BellSouth. The status of developments should be clearly noted.

The topic discussed in this RFI covers a very broad area and has impact potentially on the complete network, end-to-end, with a variety of technologies and possible solutions. Therefore, in providing information against any question contained in this document vendors are strongly encouraged to identify additional requirements, and recommended solutions.

Additionally, BellSouth seeks information on the incentives that can be offered to encourage the development and supply of wireless location technology and supporting network systems. Such incentives could include for example:

- The sponsorship of industry forums
- The funding of 'proof of concept studies'
- Advance orders for equipment

Please note that the mention of the above examples does not in any way imply a commitment by BellSouth to offer any incentives to any party. Additionally, the list above is not exhaustive; any alternative suggestions from the industry are welcome.

7.1.3 Availability Timescales

It is recognized that the developments about which information is sought will be available over a range of timescales. For the purpose of this RFI, the timescales that should be considered are:

- T1. Immediate availability or within one year of the release date of the RFI
- T2. One to three years from the release date of the RFI
- T3. Three to five years from the release date of the RFI
- T4. Five or more years from the release date of the RFI

Please note that information on timescales needs to be purely indicative only and that no commitment will be viewed as having been made when availability is discussed by a vendor.

7.2 Background

Emergency 911 systems in existence today have been developed to provide rapid response to calls for emergency service from wireline telecommunications subscribers (connected to the fixed wireline public switched telephone network, PSTN). Basic 911 (B 911) emergency systems establish routing of calls to a Public Safety Answering Point (PSAP). The PSAP service provider has the responsibility for connecting the caller to the appropriate emergency response agency or forwarding to another PSAP for response. Enhanced 911 (E 911) systems provide added capabilities that include selective routing of calls to a more appropriate geographical or

jurisdictional PSAP for rapid response, the display of calling number, address, and in most cases, the primary subscriber's name. From this information the PSAP can obtain further information from its own database regarding selective responses, pre-notified contact information (such as on-site security officials, or building/facilities management contacts) and /or appropriate response agencies. The PSAPs' databases are developed from telephone companies' subscriber billing records and reference a central dedicated 911 master street address guide geo-file (MSAGs).

For wireline services it is possible through these systems with their multiple databases, to provide location and appropriate response information to enable rapid response to an emergency situation. However, these emergency service systems do not address the unique characteristics of mobile radio-telecommunications services (wireless services).

Currently, wireless services do not provide adequate caller location information to allow intelligent routing of an emergency 911 call to an appropriate PSAP or response agency through the PSTN. Indeed, in many emergency situations the caller is not aware of their exact location or is suffering additional disorientation caused by the emergency. This lack of location information often extends the call process and delays the dispatch of the proper response agency.

Fundamentally, there are two issues to be addressed for wireless services to provide wireline-compatible emergency 911 information. First, the mobile nature of wireless telecommunications and the unique characteristics of radio communications make location information difficult to determine. Second, once the location information is known, it has to be transferred seamlessly and rapidly through the interconnecting networks to the appropriate rapid response agency. Before high quality location information can be advantageously used to satisfy the requirements of routing to the appropriate PSAP service provider for a timely response, a number of advances must be made in wireless telecommunications systems, the associated interconnecting networks, and the PSAP systems themselves.

Developments of location technologies are advancing rapidly and there is a number of developments underway that might improve wireless E 911 emergency service. However, these technologies have and are being developed independent of the 911 application. The choice of which location technology is 'best' suited for the 911 application is a complex question that has to be evaluated with the application requirements firmly in view. The impact on the wireless network infrastructure will determine the optimal suitability of the myriad of technologies under development.

7.3 Market Environment

While some wireless systems are capable of providing basic 911 service, few currently provide enhanced 911 service. In major metropolitan areas, it is estimated that as many as 10% of the 911 calls originate from mobile radio service subscribers. It is expected that by the end of the century there will be more than 60 million cellular and approximately 10 million PCS subscribers. This unprecedented growth of mobile radio service subscribers will undoubtedly increase significantly the number of wireless 911 calls initiated; estimated to approach or even exceed the volume of wireline 911 calls by the year 2000. In addition, mobility coupled with this higher ownership of mobile equipment will result in multiple calls for the same incident being reported by mobile radio subscribers, thereby compounding the growth potential for increased wireless 911 originations. It has been noted by several public safety agencies that there is an